Non-valvular Structural Heart Disease

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TCT-672

Transcatheter Closure of Perimembranous Ventricular Septal Defects: Occluder Waist Length and Post-Procedural Arrhythmias

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Background: complete atrioventricular block (cAVB) is considered as the most serious post-procedural adverse event in transcatheter closure of perimembranous ventricular septal defect (VSD). In our study, incidence of post-procedural arrhythmias and its relationship with occluder waist-length were evaluated.
Methods: In this retrospective study, clinical data from perimembranous VSD patients who had been treated with transcatheter occluders in our center from December 2001 to December 2010 were analyzed. Patients were treated in two groups, short-waist vs long-waist group. Patients were required for routine clinical visit at 1, 3, 6, and 12 months after the procedure and once a year thereafter.
Results: 234 patients had been deployed with short-waist occluders (2.0 mm～2.5 mm) and 571 with long-waist occluders (3.5 mm-4.5 mm). The occlusion rate was 98.7% in patients occluded with the short-waist devices and 97.9% in patients occluded with long-waist devices respectively. Patients treated with long-waist occluders had significantly less arrhythmias vs short-waist group (P<0.001). Particularly, 9 (3.8%) patients in the short-waist group had complete atrioventricular block (cAVB) and 3 (1.3%) required permanent pacemaker implantation. In the long-waist group, 4 (0.7%) patients had cAVB and 1 (0.2%) had permanent pacemaker placement. The difference was statistically significant (P<0.001). In addition, cAVB occurrence was significantly correlated with occluder waist-length. No significant differences were noted in other procedure-related complications between patients with short-wasit devices and patients with long-waist devices.
Conclusions: In perimembranous VSD patients who underwent transcatheter occlusion, occluder waist length received might be related to post-procedural cAVB.

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Efficacy and Safety of Left Atrial Appendage Occlusion with the Watchman Device without Post-Procedure Oral Anticoagulation.

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Background: Left atrial appendage occlusion (LAAO) with the Watchman device requires oral anticoagulation and antiplatelet therapy for 45 days post-procedure, to allow for device endothelialization. We are the second group worldwide to report findings on the safety and efficacy of LAAO without oral anticoagulation (OAC) post-procedure.
Methods: Multi-centre, prospective, non-randomized study of LAAO with the Watchman device. Follow-up consisted of transesophageal echocardiography at 45 days, and visits at 3 monthly regular intervals thereafter. Approval for the procedure was obtained at our cardiology/cardiothoracic surgery meeting.
Results: 43 patients underwent the Watchman procedure in the period February 2010 to May 2013. The mean age was 72 years, and 62% of the patients were male. The median CHA2DS2VASc was 4. Out of 36 successful occlusions, 23 (64 %) were treated with dual antiplatelet therapy (DAPT) post-procedure, two patients (6%) had a single antiplatelet agent, and one (3%) had no anticoagulation at all. The remaining 9 (25%) were treated with OAC and anti-platelet therapy. Compared with the OAC group, patients in the DAPT group had a marginally higher mean CHA2DS2VASc score (3.6 versus 3.5), had a lower rate of previous thromboembolism (37.5% versus 50%), and a shorter mean follow-up (16 months versus 21 months). We prospectively followed patients for an average of 17 months (range, 0-44 months). During follow-up, no ischemic strokes occurred. By contrast, the expected annual ischemic stroke rate in our cohort is 4%, and the observed rates in the Watchman and warfarin arms of the PROTECT-AF trial were 1.4% and 2.2%, respectively, despite the former patient cohorts having lower mean CHA2DS2VASc score (2.2). One patient in the DAPT group suffered a fatal intracranial hemorrhage 6 weeks post procedure. One patient died as a result of LAA perforation. 4/43 (9%) patients developed a pericardial effusion requiring drainage. No device embolization or other serious complications occurred.
Conclusions: Our experience suggests that in high-risk patients with serious contra-indications to OAC, Watchman device deployment without OAC cover may be feasible without increasing the risk of ischemic stroke.

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WATCHMAN Left Atrial Appendage Occluder In Octogenarians: Short-term And One-year Follow-up

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Background: Left atrial appendage (LAA) occlusion is useful in patients with atrial fibrillation to avoid long-term anticoagulation. The safety and efficacy in older patients over 80 years of age is not well known.
Methods: A retrospective review of patients 80 years or older with atrial fibrillation who underwent LAA occlusion with the WATCHMAN device at our hospital was performed. Baseline demographic, procedural, and follow-up data were obtained.
Results: Between June 2006 and June 2011, 26 patients (53.8% male, age 83 +/-2.6 years) were identified. Hypertension, coronary artery disease, and congestive heart failure were present in 100%, 50%, and 38.4% respectively. Atrial fibrillation was permanent in 61.5% of patients, with 11.5% and 18.5% having a prior stroke or TIA, respectively. Mean CHADS2 and CHADS-VASc scores were 3.2 and 5.3. Anti-coagulation with vitamin K antagonists was used in 50% of patients. Multiple appendage lobes were present in 11.5%. Procedures were successful in 92.3% of patients. The procedure was unsuccessful in two patients due to device instability and difficulty with positioning. At six months, one device thrombus and one episode of atrial tachycardia was reported. One-year follow-up revealed no deaths, one pacemaker implantation, one peripheral vascular procedure, and one additional hospitalization due to CHF. No strokes were reported in the follow-up period.
Conclusions: WATCHMAN LAA Occluder implantation is feasible and safe in octogenarians. Efficiency in stroke prevention is supported by an absence of cerebrovascular events.

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Comparison of 5 devices used to treat Patent Foramen Ovale (PFO)

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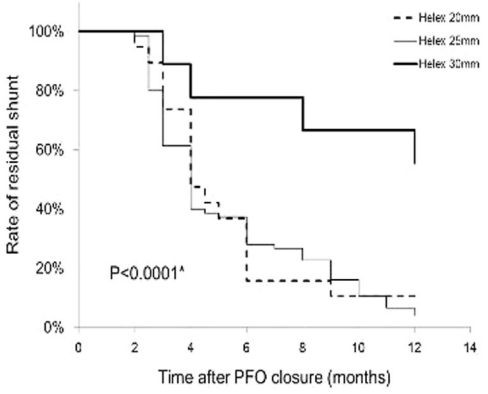
Background: Several devices have been used in the past decade for transcutaneous PFO closure to prevent conditions associated with PFO. Selection of the appropriate device is important to effectively close the PFO but the closure rate of different devices are not well described. In this retrospective study, the degree of right-to-left shunting was quantified following the placement of 5 different PFO closure devices.
Methods: From January 2001 to January 2013, 327 patients underwent transcutaneous PFO closure in our hospital. 167 patients received transcranial Doppler (TCD) studies at pre procedure and after 3 months and repeated every 3 months to evaluate effective PFO closure.
Results: An effective closure occurred in 150 patients (90%) over all devices. Comparison of device type revealed the highest effective closure rate was associated with the Amplatzer ASO device (100%), followed by the Amplatzer Cribriform (93%), Gore Helex (90%), Amplatzer PFO (86%), and CardioSEAL (86%) device. The highest rate of residual shunting at the end of the 12-month period was observed in patients who received the 30mm Gore Helex device which has a significantly higher rate of residual shunting compared with the 20mm and 25mm Helex devices (p<0.0001, Figure 1).



Conclusions: Transcutaneous PFO closure has a high success rate, with residual shunting occurring in about 10% of cases. The 30 mm Helex non-self-centered device should be avoided in patients with large size PFO defects as it provides insufficient closure of the PFO tunnel. We recommend an Amplatzer ASD occluder for PFO diameters greater than 12 mm based on balloon sizing.

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